



Builders Challenge

Recognizing Energy Leadership in Homebuilding

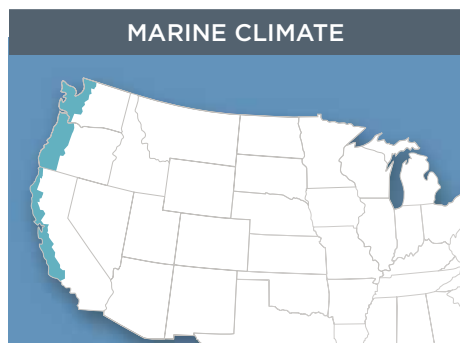
High Performance Builder Spotlight

Clifton View Homes

Coupeville, Whidbey Island, Washington

Clifton View Homes builds super-efficient homes that qualify for DOE's Builders Challenge like this home on Whidbey Island that achieves a 57 on the HERS index.

Since 2005, every house built by Clifton View Homes of Whidbey Island, in Washington state, has met the stringent requirements of Built Green, Northwest ENERGY STAR, and the Federal Tax Credit for homes. Now, Ted Clifton, president of Clifton View Homes, has raised the quality bar and built his five latest homes to earn the U.S. Department of Energy's Builders Challenge certification as well.



BUILDER PROFILE

Clifton View Homes

www.cliftonviewhomes.com
Ted Clifton, President of CVH Inc.
360-678-70100, cvh@whidbey.net

Year Founded: 1990

Homes Built This Year and Since Founding:

4 homes per year, about 80 since founding

Featured Home: 2,501-sq. ft., 1-story + basement; built 1/6/2010, \$90/sq. ft.

Energy-Efficiency Commitment: All homes Builders Challenge, NW ENERGY STAR, Built Green, Federal Tax Credit



Clifton's most recent home achieves a Home Energy Rating Score (HERS) of 57, well below the 70 required for Builders Challenge. The home also beats the strict Washington State Energy Code's performance by close to 40% according to Clifton.

The 2,501-square-foot, one-story home uses radiant floor heat, which Clifton incorporated into a 2-inch concrete slab on the main floor and a 4-inch concrete floor on the basement level. Water for the radiant flooring loops is heated with an air-to-water heat pump located in the home's lower level. According to Clifton, the heat pump is 210% efficient down to 10°F. A backup electric heater was installed but has not been needed. Strategically placed windows add passive solar heat gain.

Helping retain the home's heat is an extra snug thermal enclosure, which is provided by structural insulated panel (SIPS) that are 10.25 inches thick for R-40 insulation value in the roof and 6.5 inches thick for R-25 in the walls. Below-grade walls are made of R-25 insulated concrete forms. There are two 2-inch layers of rigid foam XPS insulation (worth R-20) beneath the entire foundation slab.

Air conditioning was not included, but fans have been ingeniously installed to take advantage of the Northwest evening temperature drops for morning cooling of the home on anticipated hot days. A 230-cfm exhaust fan on the kitchen range hood upstairs operates on the same switch as a 240-cfm fan ducted to the outside on the basement level to act as a de facto whole-house fan. On rare, hot summer days, the fans are turned on in the morning to draw fresh outside air into the lower level from a shaded spot under a west-facing deck. The fan pulls the outside air through a HEPA filter, before it is drawn through the house, and up and out the roof via the range hood exhaust.

A timer-controlled 80-cfm ENERGY STAR exhaust fan in the laundry room meets ASHRAE 62.2 requirements.

In Whidbey Island's damp marine climate, good water management is a must. CVH uses Form-A-Drain, a recycled PVC product shaped like hollow 2x4s that are connected to create forms for pouring concrete footings then left in place to serve as a permanent drain along the interior and exterior side of the footing. These PVC "forms" have slots along the outside face allowing any water that collects near the foundation to seep into the hollow lengths where it is transported away from the foundation. At the Whidbey Island site, a length of flex pipe carries water collected from the drains to an abandoned septic system drain field on a lower portion of the property.

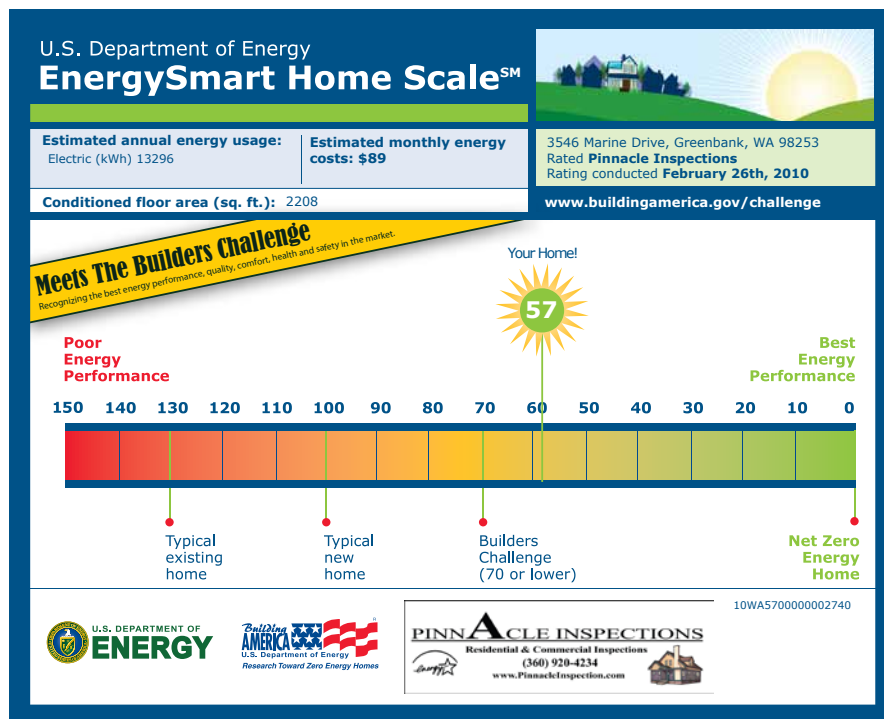
The home does not have solar installed due to homeowner budget limitations, but is solar-ready, with conduit installed to accommodate solar water heating pipes in walls and floors. The roof design will accommodate up to 9.6 kW of photovoltaic panels and a 40-tube solar hot water system, when the homeowner is ready to purchase them.



An air-to-water heat pump heats the fluid for the radiant floor heating. Insulated-concrete-form lower walls and SIPS upper walls and roof provide a superior thermal shell to keep heating costs very low for this marine climate home.

U.S. Department of Energy Builders Challenge

DOE seeks to give every consumer the opportunity to buy a cost-neutral, net-zero energy home anywhere in the U.S. by 2030. Homes that qualify for this Builders Challenge must achieve a 70 or less on the EnergySmart Home Scale (E-Scale) which is based on the Home Energy Rating System (HERS) index (www.natresnet.org). The E-Scale allows homebuyers to understand—at a glance—how the energy performance of a particular home compares with others.



To learn more about the Builders Challenge and find tools to help market your homes, visit www.buildingamerica.gov/challenge.

Key Features

- **HERS Score:** 57
- **HVAC:** radiant floor heated by air-to-water heat pump
- **Roof:** 10.25-inch SIPS (R-40), standing seam steel roof
- **Above-Grade Walls:** 6.5-inch SIPS R-25, contoured housewrap, fiber cement siding
- **Below-Grade Walls:** insulated concrete form, R-25
- **Main Floor:** 2-inch concrete slab insulated with fiberglass batts between joists to R-38
- **Basement Floor:** 4-inch concrete slab insulated under slab and at slab perimeter with R-20 rigid foam
- **Rim Joists:** 2-inches rigid foam spray foamed in place + 12-inch R-38 fiberglass batt
- **Ventilation Type:** 80 cfm ceiling fan in laundry, plus HEPA filtered 240 CFM fan on lower level at fresh air intake and 230 CFM fan on range hood
- **Air Sealing:** SIPS seams caulked, spray foamed, and butyl taped
- **Windows:** Vinyl-framed, low-e, gas-filled, ENERGY STAR, SHGC=0.25, U-value=0.28-0.30
- **Appliances:** ENERGY STAR refrigerator, clothes washer, dishwasher
- **Lighting:** 100% CFL LED, tube skylights

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ENERGY

Energy Efficiency &
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EERE Information Center
1-877-EERE-INF (1-877-337-3463)
www.eere.energy.gov/informationcenter

PNNL-SA-76953 January 2011 - 7

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